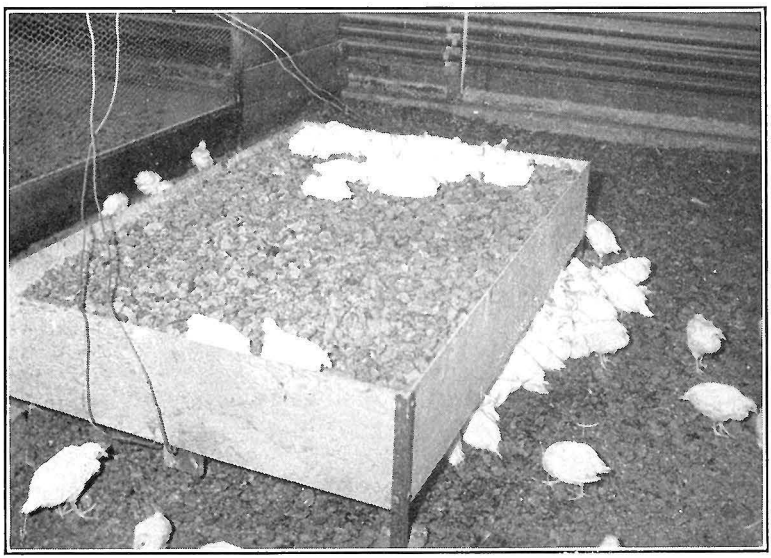
SPECIAL CIRCULAR NO. 63 (FIRST REVISION) FEBRUARY, 1943

HOMEMADE ELECTRIC LAMP BROODER

D. C. KENNARD AND V. D. CHAMBERLIN

This new electric lamp brooder—

Uses a minimum of metals needed for war purposes.
Weighs about 30 pounds without insulating material.
Accommodates 150 to 250 chicks when made 4 by 4 feet or 250 to 300 chicks when made 4 by 6 feet.
Operates on the basis of behavior and comfort of the chicks and does not require thermostatic heat control or a thermometer.
Has a wide range of heat supply for special brooding requirements throughout the year.
Requires no curtains during usual brooding conditions.



The brooder in use, with some of the chicks finding it comfortable on top of the hover

---

OHIO AGRICULTURAL EXPERIMENT STATION
WOOSTER, OHIO

This new electric lamp brooder was designed and first used by the Ohio Agricultural Experiment Station in October 1940. During the meantime, these brooders have been in almost continuous use. They have been used successfully for starting and brooding thousands of chicks throughout the year and for brooding poults.

This brooder operates on the basic principle that chicks or poults adapt themselves readily to their heat and air requirements when ample heat and air are provided, a principle substantiated by experience with these brooders throughout the year under widely varying conditions. At no time was there noticeable evidence of a need for thermostatic heat regulation, additional ventilation, a thermometer, or other items that would make these brooders more complicated and expensive.

The hovers are simple, inexpensive, and easily made of plywood, pressedboard, wallboard, sheet rock, or lumber. Sides are 12 inches wide and extend 4 inches above the top to provide ample space for the fine litter-insulation material. Desirable insulation materials are finely ground corncobs, shavings, sawdust, or fine peat moss. With this type of hover, chicks are encouraged to roost on top of the brooder. After the first 2 weeks, they take to the top day and night and thus leave more room for those remaining on the floor. The bottom edge of the hover is 4 inches above the floor. Side curtains can be used when needed during severely cold weather. If there are floor drafts, a curtain can be used on the one or two exposed sides.

The curtains used at the Experiment Station when needed to prevent floor drafts or to conserve heat under the hover during severely cold weather are strips of cloth 8 inches wide and 4 feet long made from cotton feed bags. The strips are attached to the sides of the hover with tacks so that the bottom of the curtain is ½ to 1 inch above the floor litter. The bottom of the curtain should be hemmed but need not be slit.

It is advisable to have 4 inches of ground corncobs, shavings, sawdust, chopped straw, or other fine material to keep the floor warm. The litter should be removed from under and just outside the hover and replaced daily by litter from other parts of the room. After the first 2 weeks, by shifting and stirring daily, litter can be kept in good condition for a much longer time.

The hover can be made 4 by 4 feet for 200 to 250 chicks or 4 by 6 feet for 250 to 300 chicks. The lamps are placed in a horizontal position in the center of opposite sides of the 4- by 4-foot hover or in the center of the ends of a 4- by 6-foot hover so that the center of the porcelain lamp socket is 2½ inches above the bottom edge of the hover. Porcelain sockets must be used with this type of lamp.

This type of brooder, with the abundance of light within, makes it convenient to feed and water chicks or poults under the hover during the first day or two; after that, the feed and water can be moved outside. The abundance of light beneath the hover and the feeding of baby turkeys under the hover during the first 2 days have proved especially advantageous for starting poults.

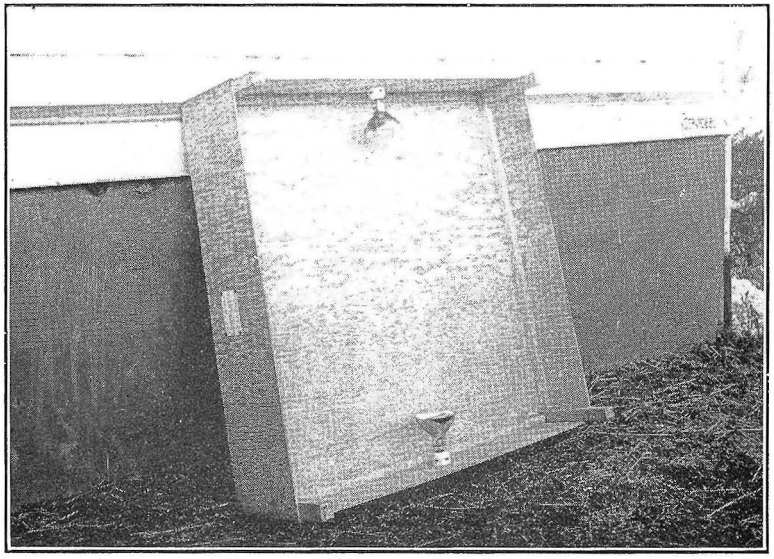
Whenever it is observed that a considerable number of chicks find it comfortable at the edge of, or outside, the brooder, one side of the hover should be raised 2 to 4 inches to admit more air and to lower the temperature beneath it, or if two lamps are in use, one can be turned off.

In usual practice under average brooding conditions from March to November, or in a room where supplementary heat is provided, the 250-watt lamp or two 150-watt lamps would be used during the first week or 10 days when the chicks or poults need the most heat. After that, the 150-watt lamp would generally be used for the rest of the brooding period. On this basis, the cost of operating the 250-watt lamp 10 days (at 18 cents a day of 24 hours with electric current at 3 cents a K. W. H.) would be $1.80, and that for the 150-watt lamp (at 10.8 cents a day for 32 days), $3.45. The total cost of electricity during a 6-week brooding period would, then, be $5.25. In warm weather, the cost of electricity would be lower, since the brooder lamp could either be turned off, or one of the brooder lamps could be replaced by an ordinary 15-, 25-, or 50-watt Mazda light bulb to provide an attraction light and a small amount of heat during warm days or nights. Likewise, the small Mazda bulbs could be used during the latter part of the brooding period, when an attraction light and only a little heat are needed. Brooding during cold weather in a cold room with both lamps in use much of the time would cost correspondingly more.

The effective top insulation against heat loss which this type of hover provides can be expected to prove economical in use of electricity. In two of the tests, meter readings were made to secure the electric current requirement of the lamp brooder in comparison with a conventional brooder equipped with thermostatic heat regulation fan and special ventilation. The first test was conducted in uninsulated colony brooder houses during January and February, 1941, and the second, in adjoining brooder pens during April and May. In both tests, the electric current consumption was somewhat less for the lamp brooder.

Electric lamps have recently become available which offer new opportunities for brooding chicks and baby turkeys. These lamps are available in two types, 150-watt projector or reflector spot or flood lamps and 250-watt R-40 Bulb Drying or Heat Lamps, which project infrared or radiant heat rays and light. The projector lamps are made of heavy glass and can be subjected to cold water, rain, or snow when burning, whereas the other lamps, made of thin glass, are liable to crack if water contacts them while they are burning. The projector and reflector lamps have a life rating of 1,000 or more hours, and a longer life can be secured by using 120-volt lamps on a 110- to 115-volt circuit. The 120-volt lamps generally serve for two brooding periods. The 250-watt R-40 Bulb Drying Lamps have a much longer life rating, 5,000 or more hours.

Although regular 150- or 200-watt Mazda light bulbs are not considered as effective, they can be used when necessary or when the special lamps are unavailable.



Inside of 4- by 4-foot hover equipped with two lamps

The following tabulation describes different types of lamps which can be used in this hover:

Type of lamp	Volts*	Watts	Bulb	Approximate hours life	List price
Reflector Flood†	110-120	150	R-40	1,000	$0.95
Reflector Flood†	110-120	200	R-40	1,000	1.10
Projector Flood†	110-120	150	R-40	1,000	1.40
Drying	110-120	250	R-40	5,000	1.75
Heat	110-120	250	R-40	Indefinite	2.00
Mazda household bulbs	110-120	100 to 200	R-40	1,000 to 750	.13 to .27

*When possible, use 120-volt lamps, as they last longer than 110 to 115-volt lamps.
†Spot lamps can be used in place of flood lamps.

The following materials are needed for a 4- by 4 – foot brooder:

One piece of 4- by 8-foot, ¼-inch plywood or ⅛-inch pressed board (to be cut into one 4- by 4-foot top and four 1- by 4-foot sides)

Four cleats 1 inch by 1 inch, 4 feet long, to which the top and sides are nailed

Four pieces of 1½- by 1½-inch lumber, 16 inches long, for corner posts or legs

Two porcelain electric lamp bulb sockets

One 150-watt, 115- or 120-volt projector or reflector Mazda spot or flood lamp and one 250-watt R-40 Bulb Drying Lamp

Twenty feet* of well-insulated electric appliance cord with plug and cap

*When a separate cord extends to each lamp. If one socket is cut in on a single cord and the same cord extended over the top of the hover to the other socket, less is needed.